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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,621	01/18/2002	James Bernard Kruger	SJO920010141US1	5781
7590	05/10/2004		EXAMINER	
Ron Feece			KIM, PAUL D	
INTERNATIONAL BUSINESS MACHINES CORPORATION			ART UNIT	PAPER NUMBER
Dept. L2PA			3729	
5600 Cottle Road				
San Jose, CA 95193				
DATE MAILED: 05/10/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/054,621	KRUGER ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Paul D Kim	3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 22 April 2004.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 5-8, 10-18 and 27-30 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-4 and 9 is/are rejected.
- 7) Claim(s) 19-26 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 18 January 2002 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All · b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                                              |                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                         | Paper No(s)/Mail Date. _____.                                               |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/18/02</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|                                                                                                                                              | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

This office action is a response to the election of species requirement filed on 4/22/04.

### ***Election of Species Requirement***

1. Applicant's election of Species DA, claims 1-4, 9 and 19-26, filed on 4/22/04 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 5-8, 10-18 and 27-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse filed on 4/22/04.

### ***Claim Objections***

3. Claims 25-26 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.  
  
Claim 25 recited the limitation "removing the shaping layer" as recited in line 4. It is confused that the claimed invention of claim 19 is disclosed for forming a shaping layer. However, the further limiting recitation recited in claim 25, line 4, discloses a process of removing the shaping layer. Clarification is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 3729

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the first shield layer" recited in line 5 and "the first pole piece layer" recited in line 6. There are insufficient antecedent basis for this limitation in the claim.

#### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Santini (US PAT. 6,301,084) in view of Trumpp et al. (US PAT. 4,502,914).

Santini teaches a process of fabricating a write head comprising steps of: forming a shaping layer (188) on an underlying layer (P1), wherein the photoresist layer is photopatterned with an opening (including top and side surface) as shown in Fig. 14G; depositing a ferromagnetic material (seed layer of Cu or NiFe, col. 3, lines 10-43) covered the shaping layer and the underlying layer as shown in Fig. 14H; removing the shaping layer and removing unwanted portion of the ferromagnetic material to form the pole tip as shown in Figs. 14I and 14J (see also col. 8, line 5-29).

However, Santini teaches the processes of removing the shaping layer before removing the ferromagnetic material. Santini does not teach a process of removing first and second portions of the ferromagnetic material from the underlying layer and top surface of the shaping layer respectively leaving a remaining portion of the ferromagnetic material on the side surface of the shaping layer. According to Figs 1A and 1B of Trumpp et al. show a process of removing first and second portions of the material from an underlying layer (substrate) and top surface of the shaping layer (polymeric layer) respectively leaving a remaining portion (SiN) of the material on the side surface of the shaping layer in order to form a microwidth of the pole tip portion (see also, col. 4, line 53 to col. 5, line 10). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify a process of fabricating a pole tip of Santini by removing portions of the material from the underlying layer and the shaping layer as taught by Trumpp et al. in order to form a microwidth of the pole tip portion.

8. Claims 2-4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Santini in view of Trumpp et al., and further in view of Chen et al. (US PAT. 5, 419,600).

Santini, modified by Trumpp et al., teaches all of the limitation as set forth above including a process of removing the shaping layer (polymeric layer of Trumpp et al. as per **claim 3**) and forming a read head comprising forming nonmagnetic first and second read gap layers (76,78) and forming a read sensor (74) between the first and second read gap layers and forming the first and second read gap layers between a first shield

layer (S1) and a first pole piece layer (P1) as shown in Fig. 9 of Santini (as per **claim 4**). Also, as per **claim 9** Santini teaches that the photoresist layer is photopatterned with an opening (including top and side surface) and depositing the ferromagnetic material wherein the side surface of the photoresist layer coincides with an edge of the pole tip as shown in Figs. 14G-J.

However, Santini, modified by Trumpp et al., does not teach a process of depositing the ferromagnetic material by ion beam sputtering at angle to a normal to the flat surface. Chen et al. teach a process of fabricating a magnetoresistive head including a process of depositing P1 and P2 layers of ferromagnetic material by ion beam sputtering at angle to a normal to the flat surface of the structure as shown in Figs. 8 and 9 in order to control the thickness of the pole tips (see also col. 7, line 61 to col. 8, line 3). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify a process of depositing the ferromagnetic material of Santini, modified by Trumpp et al., by depositing the ferromagnetic material with ion beam sputtering process as taught by Chen et al. in order to control the thickness of the pole tips.

#### ***Allowable Subject Matter***

9. Claims 19-25 are objected and as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul D Kim whose telephone number is 703-308-8356. The examiner can normally be reached on Tuesday-Friday between 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

pdk

A. DEXTER TUQBANG  
PRIMARY EXAMINER

